Ideology, Society, and the Origins of Nuclear Power in Japan

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Abstract

In light of events at the Daiichi nuclear plant this paper discusses the origins of nuclear power in Japan. These origins lie in a confluence of forces: strategic, economic and cultural. Drawing inspiration from the work of Antonio Gramsci, the paper considers the operation of these forces through an historical lens, with an emphasis on Japan's transition from feudalism to capitalism; the emergence of imperialism and ultra-nationalism; the post-surrender occupation of Japan by the United States; and the post-Occupation debate over nuclear power. Gramscian analysis highlights the key role of both the state and civil society in the promotion of science and technology as a tool of economic growth and as a symbol of national autonomy. The article suggests that – despite the Fukushima tragedy – Japan will continue to develop its nuclear industry for many years to come. This is the case not only because of ongoing strategic concerns and the power of the 'nuclear village', but also because the ideology of techno-nationalism is deeply ingrained within and throughout Japanese society.

The radiation leak suffered by Japan on 11 March 2011 will have long-term repercussions, both domestically and globally. A number of governments – most prominently the Federal Republic of Germany – were quick to announce reviews of their nuclear programmes as a consequence of the radiation leak at the Fukushima Daiichi Nuclear Power Plant, and the decision taken by the Japanese government to scale back its plans for nuclear expansion will have important demonstration effects elsewhere.[1]

Yet, despite the risks associated with nuclear power, the Japanese government will be loath to give it up. Indeed, while a moratorium on future developments has been announced since the disaster, as late as June 2010 the strategic energy plan of Japan called for the building of 14 additional nuclear plants by 2030 (METI 2010). The February 2014 election of Masuzoe Yoichi as Tokyo mayor, ahead of two anti-nuclear candidates, indicated a weakening of anti-nuclear sentiment, possibly due to the trade deficit, which doubled between 2012 and 2013. Despite public hostility in the wake of the disaster, the publication of the latest Strategic Energy Plan in April 2014 confirmed that nuclear power will continue to feature in Japan's energy mix for many years to come (METI 2014).

Underpinning these discussions are a number of concerns, none of which can be lightly set aside. Japan is only 16 per cent self-sufficient in energy, and oil provides 46 per cent of its primary energy

[1] In regard to antinuclear movements in East Asia, see Sulfikar (2009), Chen (2011) and Hong (2011). For contrasting post-Fukushima approaches in Europe see Office of the Prime Minister (2012) and Jahn and Korolczuk (2012).

needs. The Middle East supplies 77 per cent of this oil. Cheap oil is a thing of the past, but reliability of supply remains a key issue for Japan.[2] In this context, the sense of vulnerability that has shaped the worldview of Japanese governments throughout the modern era can only have been sharpened following the Arab Spring. Some of the consequences of the Arab Spring have been the fall of the regime in Libya, ongoing unrest in Egypt, civil war in Syria, and the declaration of a 'caliphate' embracing parts of Syria and Iraq. In addition, there is continuing concern surrounding Iran's nuclear programme and the Arab-Israel dispute.

With all of Japan's nuclear reactors shut down for maintenance and safety checks, the trade balance has suffered – recording a deficit for the first time in thirty-one years in 2011. With their energy bills climbing ever higher, members of the business community have begun to mutter about moving abroad where costs are lower. The Japanese government is, accordingly, desperate to restart those few reactors that have successfully passed safety and stress tests. However, the local governments empowered to permit reactivation of these power plants anticipate a backlash from local constituents, and a great deal of foot dragging has been the result. If the central government asserts its prerogative to bring these plants back on line regardless of local concerns, it opens itself up to punishment at the national polls.

A further concern is that the development of nuclear power is a prime example of the high-technology, high value-added export-oriented industry so important to the continued success of a mature economy such as Japan. Moreover, the Japanese government has committed the country to reducing its carbon footprint in line with the Kyoto Protocol and other environmental agreements, and nuclear power is seen as contributing towards this goal (METI 2014). Finally, Japan confronts three nuclear-armed powers in its immediate neighbourhood: China has aspirations towards regional leadership, and relations with both Russia and China have been soured by long-running territorial disputes (Connors et al. 2012). North Korea is at once fragile and openly aggressive, and perceptions of its instability have heightened following the death of Kim Jong-il. Increased military preparedness throughout Northeast Asia has been the result. Given concern over the US commitment to defend Japan in the event of an attack – particularly a nuclear attack – the Japanese government will almost certainly want to retain the option to develop nuclear weapons in the future. Indeed, a growing body of literature attests to a Japan that is becoming more 'normal' in its attitude towards the possession and use of military power as a legitimate tool of foreign policy (Oros 2008; Taylor 2011). Recent efforts by the Japanese government to reform the Constitution so as to allow Japan a more active military role appear to confirm these analyses.

[2] The classic account in English of the development of Japan's energy sector is Samuels (1987).

In light of events at Fukushima, this paper assesses the potential demise of nuclear power in Japan by examining its origins, from both an empirical and a theoretical perspective. From an empirical perspective, exploring the origins of nuclear power in Japan can shed light on the difficulties associated with the promised dismantling of the nuclear industry. A host of powerful interests, both within and beyond the country, will fight to secure a nuclear future for Japan. These interests will be military, bureaucratic, political and commercial. They will deploy financial, technical and 'moral' arguments in support of their cause. Just as it was 60 or so years ago, the immediate focus will be on Japan's much be-moaned "vulnerability": to military attack, to the vicissitudes of natural resource dependence, and to economic slowdown and decline in the face of energy scarcity. This narrow focus on vulnerability will act as a proxy for a wider discussion about – and struggle over – the type of society in which Japanese people want to live: in other words, over Japan's collective identity.

The second reason is theoretical. In the context of East Asia, Science, Technology and Society studies (STS) is clearly a site of intellectual inquiry awash with interesting and fruitful theoretical approaches and conceptual frames (Mizuno 2012). This variety of intellectual endeavour is no bad thing according to a recent commentator, who likens the field to 'an elephant whose shape we are trying to determine by touching it in the dark' (Fan 2012: 487). This paper attempts to run an additional pair of hands over the 'elephant' by developing an empirical account of the introduction of nuclear power into Japan inspired by the work of Antonio Gramsci. A Marxist intellectual of the first order, Gramsci is renowned for his exploration of the "superstructure" of the capitalist mode of production: the realm and *milieu* of politics, religion, science and culture. There is good reason to argue that Gramsci's work can be used to develop an account of the introduction of nuclear power into Japan that complements and extends existing narratives of that process. In particular, a Gramscian analysis demonstrates the key role of both the state and civil society in the promotion of science: both as a tool of economic growth and as a symbol of national autonomy. In so doing, this retelling of a familiar tale can add value to (East Asian) STS as a field of intellectual inquiry and also provide one response to a recent call for help in untangling 'the complex situation in which the Japanese now find themselves' (Fujigaki and Tsukahara 2011: 393).

The paper opens with a brief rehearsal of those elements of Gramscian historical materialism central to the empirical study conducted in this paper. The remainder of the paper examines the historical narrative, comprising: the development of the ideology of techno-nationalism during the transition from Tokugawa to Meiji; the "domestic" political economy of nuclear power, including the social

struggle that attended nuclearisation; and the decisive propaganda campaign that successfully spun the "friendly atom".

Gramsci's Historical Materialism

Gramsci's *Prison Notebooks* (1971) contain only three brief and tangential references to Japan: one in a discussion of the role of intellectuals in society and the other two in the passages on 'Americanism and Fordism'. Nevertheless, the existence of a range of socio-economic and political similarities between Italy and Japan – not least their "historical backwardness" relative to the major western powers – not only make comparative analysis of their respective trajectories potentially rewarding but also suggest the suitability of conducting a Gramscian analysis of the Japanese experience.[3] The Japanese case, as well as other, later examples, highlights the key role of science and technology in the struggle for emancipation from imperial control.[4] In the absence of a strong scientific and technological base, peripheral states remain locked within the embrace of their metropole. Placing the Japanese case in historical perspective, and particularly within the context of the spread of industrial capitalism, allows us to explore the context of Japan's struggle to resist western imperialism whilst at the same time granting an opportunity to understand its unique response to this existential threat. As Mizuno (2009: 2) suggests: 'For non-western nations whose modern national identities were constructed around local cultural logics and mythologies, incorporating modern science into those logics and mythologies posed a problem, even a threat.' Gramsci's sensitivity to the importance of the political and cultural milieu of specific social formations allows us to move beyond crude "centre-periphery" models, and to examine in great detail social relations within the state. Applying Gramsci's work to the Japanese case can, therefore, potentially throw new light on how Japanese people incorporated modern science whilst preserving and, indeed, fashioning anew their sense of a national identity. In addition, applying Gramsci's work can throw more light on a familiar yet important subject: the emergence of techno-nationalism as a guiding ideology for Japan, leading eventually to the adoption of nuclear power by the only country ever to have suffered direct nuclear attack.[5] If successful in the Japanese case, this type of analysis might also be undertaken in regard to other East Asian countries pursuing a similar pattern of techno-nationalism (DiMoia 2010) or, in the post-Cold War era, techno-globalism (Nakayama

[3] On the former, see Samuels (2003).

[4] Including, of course, from Japanese imperial control (Jasanoff and Kim 2009).

[5] Samuels (1994: x) defines techno-nationalism as 'the belief that technology is a fundamental element in national security, that it must be indigenized, diffused, and nurtured in order to make a nation rich and strong.' Nakayama (2012) advocates moving away from this term so as to account for the more open, less state-driven process of technological diffusion from Japan throughout East Asia in the post-war era. I continue with 'techno-nationalism' in this paper simply because much of the empirical material is drawn from the earlier period, and because nuclear power can be viewed as both a civilian technology and a military technology.

2012).

The major thrust of Gramsci's historical materialism of relevance to this paper was the result of his attempt to correct perceived difficulties with existing Marxist accounts of the origins and likelihood of social revolution. These accounts, according to Gramsci at least, privileged an analysis of the forces of production (the economic "base") at the expense of an analysis of the social relations of production (the socio-political "superstructure"). As a consequence of this imbalance, classical Marxism could account adequately neither for the revolution that took place in relatively "backward" Russia nor for its failure to appear in the relatively more "advanced" European economies. The solution, Gramsci suggested, was to examine more closely the complex web of political and cultural relationships through which the legitimacy of the state and its apparatus is maintained.

As is well known, Gramsci re-thought a number of familiar concepts as a consequence of his diagnosis of the failures of orthodox Marxism.[6] Perhaps his major contribution was to inquire into the nature of hegemony. Rather than a sole focus on the *coercive* nature of hegemony that had been such a feature of orthodox Marxist accounts, Gramsci characterised hegemony as a dual process: one of "force" in the last instance but of "consent" where possible. In a situation where hegemony prevails, force and consent 'balance each other reciprocally, without force predominating excessively over consent. Indeed, the attempt is always made to ensure that force will appear to be based on the consent of the majority' (Gramsci 1971: 80, fn. 49).

Accordingly, ideology plays a key role in Gramscian analysis. The production of ideology, its transmission, reception, and evolution are central concerns in his attempt to understand how Italian society was brought together and stayed together despite the deep tensions that threatened to reave it asunder. Gramsci examines the ways and means through which the state, representing a hegemonic bloc of social forces, creates, maintains and manipulates attitudes and beliefs in civil society in order to secure ongoing consent (implicit and explicit, structured and "spontaneous") to rule. As Holub (1992: 45) suggests, "spontaneous" 'consent is carried by systems and structures of beliefs, values, norms and practices of everyday life which unconsciously legitimate the order of things'.

For Gramsci, civil society is not separate from the state but an integral part of it: state and civil society are co-constituted. Gramsci did at times present his ideas and arguments as though there was

[6] The literature is vast. A very good recent contribution is Thomas (2009).

a discernible separation between state and civil society, but this was done simply for heuristic purposes. Thus, we find in his work the concept of the 'extended state': involving *both* 'political society' (the state conceived narrowly in its juridical, bureaucratic and coercive forms) and 'civil society' (the realm of religion, the arts, science, culture and association). What is more, the lines of force running between state and civil society are bi-directional. In other words, at times it is clear that the state narrowly conceived is in command, while at other times the state modifies its behaviour in line with pressure exerted by civil society. The implication of this is that even under conditions of "strong" hegemony civil society has a role to play in the ongoing struggle for power and authority.

An historic bloc can be said to have formed when the interests of civil society become indistinguishable from the interests of a hegemonic class. The latter's interests are embodied within the "extended" state. The motive force behind this union of state and civil society is a complex web of relationships (economic, social, political, ethical) from which emerges the potential for the formation of an historic bloc. Turning potential into reality demands the coercive and persuasive powers of a hegemonic class, with the state maintaining 'cohesion and identity through the propagation of a common culture' (Cox 1996: 132).[7] In the case of post-war Japan the common culture propagated by the state was a mixture of "pacifism" and anti-Communism combined with economic growth; it was, in other words, techno-nationalism shorn of its explicit military component.[8] All of this was made possible by the security umbrella provided by the United States, and by US tolerance of Japanese developmental state practices.

The Genesis of Techno-nationalism

If Gramsci is correct, then if we are to re-visit the standard narrative of how nuclear power was brought to Japan we should begin not with the important period between the US-led Occupation of Japan (1945-52) and the Anpo crisis of 1960, but with the currents and events leading up to and beyond the Meiji Restoration of 1868. This is so because it was in large part in response to the encroachment of the western imperial powers that the Meiji oligarchs set Japan on the path of techno-nationalism – a path that led eventually to the adoption of nuclear power.

Two major developments underpin the transition from Tokugawa to Meiji. The first was "external"

[7] On the broad theme, see Crehan (2002).

[8] The word "pacifism" is emphasised because of the debate in the literature regarding the question of pacifism in post-war Japan. The debate hinges on the implications of the security umbrella provided by the United States – and the peculiar form and understanding of "pacifism" that results. See Bamba and Howes (1978) and Izumikawa (2010).

to Japan and took the form of western imperialism. The second – and of course related – development was "internal" and took the form of a political and economic crisis associated with the long transition from feudalism to capitalism. In combination, these two developments contributed to the unique pattern of social, political and economic relationships that coalesced within Meiji Japan, as well as to the construction of foundational institutional and ideological structures. The result was one of the most remarkable societal transformations in history. Only the barest outline of a familiar narrative will be developed below, since it is the *outcome* of the process that is most relevant.[9] That outcome is the adoption by the Meiji oligarchs (and their successors) of techno-nationalism as the best available means through which to rapidly "catch-up" to the west economically and militarily. The value of a Gramscian analysis in this case is its emphasis of the lengths to which Japan's leaders have had to go in order to secure the consent of the Japanese public to the pursuit of techno-nationalism in general and the adoption of nuclear power in particular. Japanese civil society, conceived in the Gramscian sense, has been much more central to the process than is often acknowledged in the literature.

First, then, political and social rigidity, imposed early in the Tokugawa era, deterred social mobility but could not stifle economic change. Over time, this led to the slow economic decline of the *samurai*, the rise of both a merchant class and a rural *rentier* class, and the continued impoverishment of the peasantry. By the time Admiral Perry's "Black Ships" appeared off the coast of Japan in 1853, the tensions engendered by these social and economic inequalities could barely be contained. Resistance to Tokugawa control took the form of inter-fief rivalry, whilst peasant protest became commonplace. Divisions existed also within the ranks of the *samurai*, and between the lower ranks of the *samurai* and the nobility. Perry's arrival, and the weak Tokugawa response, triggered the overthrow of the Tokugawa, the "restoration" of the imperial line, and the thorough re-making of the Japanese state and society. Second, the wider context within which these events were situated was dominated by the global spread of industrial capitalism as both a cause and effect of inter-imperial rivalry (Hobsbawm 1975). Although it became a signatory to a number of "unequal treaties", Japan did not feel the full force of western imperial power in the crucial early decades of the Meiji era. In Asia, China became the main prize, and its division into "spheres of influence" occupied the imperial powers at this time. Moreover, this period also saw heavy colonial rivalry and wars in other parts of the globe, drawing attention and resources away from the further exploitation of Japan.

[9] The literature is vast. A recent Marxist account of this process and its outcomes is Allinson and Anievas (2010). In what follows I draw upon a number of accounts, and primarily upon Norman (1973), Westney (1987), Smith (1988), and Morris-Suzuki (1994).

As a consequence, although they did not know it at the time, the Meiji oligarchs and their successors had a certain amount of breathing room in which to accomplish the rapid modernisation of Japanese society. They surmised, of course, that they did not have long to strengthen the country sufficiently to level the playing field with the imperial powers, and this partly explains their haste and the methods they employed. After all, nothing 'concentrates the mind more than grand opportunity combined with overwhelming danger' (Cumings 1999: 89). Accordingly, within a relatively short span of time after the imperial restoration the caste system had been abolished, the feudal landholding system set aside, a land tax instituted, a system of compulsory education initiated, and a conscript army raised. The machinery of government had been overhauled a number of times, and by 1889 the Emperor had gifted to his subjects a written Constitution. In short, by the turn of the century, there was now a recognisably *national* Japanese economy resting upon a solid institutional and regulatory foundation. Key characteristics of the economy were: a growing physical infrastructure, a solid tax base, increasing private ownership of financial and productive capital, close relationships between private business and the bureaucracy, an emerging focus on heavy industry and arms production, and a largely compliant, well-educated workforce (Johnson 1982; Freeman 1987). By 1902, the year in which the Anglo-Japanese alliance was concluded, the Japanese state was centralised, powerful and yet answerable, to a limited extent, to the voice of its people (Berry 1998).

Despite the limited form of democratic accountability encapsulated within the Meiji Constitution, the Meiji Restoration (and the subsequent rapid modernisation of Japan) was planned and shaped largely without the direct input of the majority of the Japanese population. It was 'a revolution carried out by dissident elements of the old ruling class: a revolution from above, not below' (Stockwin 1999: 15). Gramsci (1971: 106-20) captures moments of "revolution without a revolution" through the concept of 'passive revolution': indicating, in this particular case, a political strategy wherein a relatively small group of individuals institutes incremental yet far-reaching social change. To a certain extent, the Meiji oligarchs and their successors could rely on the coercive tools available to any state (the bureaucracy, judiciary, police and the military) in their quest for modernisation, and in this they remained true to form. However, as Gramsci reminds us hegemony requires leadership rather than domination. Thus, despite the limited democratic franchise, and in the absence of a deeply rooted democratic tradition, civil society remained important. The state was – to a limited extent – able to "mould" (Garon 1997) the minds of Japanese people, but some of the channels it developed in order to achieve this (outlined below) worked both ways, so that 'many of the new social forces entered into rather intimate relations with the state' (Garon 2003: 56).

Successive Japanese governments sought actively to channel the imagination and the energies of the Japanese people in directions best suited to their needs. Foremost amongst these channels were the pursuit of economic modernisation and imperialism. The river into which these channels jointly spilled was techno-nationalism: manifest through the pursuit of rapid industrialisation and technological advancement and underpinned by social control (Gao 1997; Low 2005). The Emperor Meiji played a crucial role. Official documents issued in his name – such as the Imperial Rescript to Soldiers and Sailors (1882), and the Imperial Rescript on Education (1890), as well as the Constitution itself – set an unquestionable ideological stamp on government policy. The sentiments contained within these official documents were bolstered by a long tradition of clarion calls to "revere the emperor, expel the barbarian", to pursue "civilisation and enlightenment" and, of course, to build Japan into a "rich nation, strong army". In addition, a rich tapestry of state-led or dominated associations such as, for example, the Ladies Patriotic Association (founded in 1901), the Local Improvement Campaign (1908), and the Imperial Military Reserve Association (1910) delivered the same message to the grass roots of Japanese society – a message that only intensified during the 1920s and 1930s as Japan entered the period of militarism and ultra-nationalism.

Techno-nationalism and the Political Economy of Nuclear Power

The previous section sketched the genesis of techno-nationalism in Japan from the mid-nineteenth century onwards, and the major channels through which its animating force was diffused throughout Japanese society. The sketch emphasised the centrality of the ideology of techno-nationalism and its role in securing the consent of the Japanese people to rapid industrialisation and imperialism. Techno-nationalism acted as the "glue" binding political society and civil society together through the shared aim of ensuring national sovereignty through "catching up" with the West. Techno-nationalism was not simply forced upon the Japanese people by a remote and brutalising elite; it was also "sold" to them as a path both to individual and collective self-determination. Techno-nationalism required putting the state before the individual; putting production before consumption; and putting nationalism before democracy. The aim of this section is to establish how and why these elements were reconfigured in the post-war era so that the adoption of nuclear power became possible.

What follows, therefore, is a stylised historical account of the 1945-1960 period, during which Japanese society consented – for the most part – to the introduction of nuclear power. This sketch emphasises a number of the key factors involved. These are: the hegemony of the United States and its shaping of a new world order; the "domestic" political economy of nuclear power; and the social

struggle over nuclear power in Japan, which was shaped significantly by the US propaganda campaign designed to secure global and Japanese acceptance of the "peaceful" atom.

US hegemony and world order

The concept of world order deployed here embraces a notion of a multiplicity of actors and values operating at all levels from localities to civilisations (O'Hagan 2002). World order is a manifestation of global hegemony and takes the form of an economic, political and social structure that shapes behaviour in ways that support and entrench the dominant mode of production (Cox 1996). In absolute terms, the United States possessed enormous economic and military power in the early post-war period. In accordance with a neo-Gramscian understanding of hegemony – as a form of power rooted in society and involving both coercion and persuasion – the US used this power to shape the actions of allies and enemies alike in accord with US interests (Cox 1987; Rupert 1995). US interests were encapsulated within the commitment to defend liberal democracy and capitalism, and driven forward by the sense of danger inspired by the menace of Communism at home and abroad (Osgood 2006).

In relative terms, however, US hegemony was partial and limited, constrained as it was by competition with the Soviet Union (Kolko and Kolko 1972). Nevertheless, the atomic bombing of Hiroshima on 6 August 1945, and of Nagasaki on 9 August, can be represented as an early assertion of US hegemony. The bombings set the stage for the Cold War and its accompanying arms race (Sherwin 2005). They also spelt the end of the Japanese empire and the destruction of much of the Japanese economy (Dower 1999). As the Cold War began to unfold, however, Japan's identity was transformed. Rather than a defeated enemy to be kept in permanent submission, US planners now saw Japan as a junior member of the US-led alliance against Communism and an emerging capitalist economy and liberal democratic polity (Schaller 1985; Welfield 1988; Swenson-Wright 2005). Accordingly, from early 1948, Japan's role was to act as a forward base of operations for the US military, including its atomic arsenal. Japan was also to act as a symbol of the benefits of capitalism and as a beacon of democracy in Communist Asia.

The Political Economy of Nuclearisation

There never was a single, unified "movement" in favour of nuclear power in Japan. On the contrary, a mixed bag of politicians, bureaucrats, businessmen, scientists and representatives of the mass media offered a variety of positions, proposals and pleas both in favour and – less often – against the development of a nuclear industry in Japan. Moreover, even those in favour of nuclear power often differed widely in their visions of its realisation. To these voices were added calls from like-

minded interests in the United States, seeking to gain through commercial and political connections with Japanese firms and the Japanese government (Medhurst 1997). The result was a divided industry – what Yoshioka (2005a) calls a 'bipolar structure' – characterised on the one hand by an alliance between the Ministry of Trade and Industry and the electric power utility companies (focussed upon importing and indigenising reactor technology), and on the other by a group headed by the Science and Technology Agency (focussed upon the independent development of reactor technology, including "fast breeder" reactors supposedly able to produce more nuclear fuel than they consume).

Japan's post-war involvement with nuclear power arguably began on 3 March 1954, three months after Eisenhower's "Atoms for Peace" speech (3 December 1953) to the United Nations.[10] This involvement began when an amendment to the Japanese budget was tabled, including 300 million Yen for the promotion of science and technology. The budget was approved one month later, on April 3, 1954. Of the total, 260 million Yen was allocated to nuclear science and technology: 235 million Yen to the construction of a nuclear reactor, 15 million Yen for uranium exploration, and 10 million Yen for the procurement of research materials. The amendment was formulated by the Reformation Party, but was tabled jointly with the Liberal Party and the Japan Liberal Party (Yoshioka 2005b). Although he was far from alone in his endeavours, Nakasone Yasuhiro claimed responsibility for this surprise move. Nakasone and his fellow sponsors stole a march on Japan's scientific community, which was embroiled in a debate less about the wisdom of nuclear research and development and more about the circumstances under which it should be conducted and the uses to which it might be put: that is, democratic control and peaceful use (Yoshioka 2005b). Much later in his career, Nakasone declared that witnessing the rising atomic cloud from a vantage point on the island of Shikoku 'lit a fire within me to develop atomic energy' (Low 2005: 40). Yoshioka dates Nakasone's interest in nuclear power from 1951, but what is not at issue is that Nakasone became an unstinting advocate for nuclear power (explicitly of *commercial* nuclear power, but implicitly not excluding a role for nuclear weapons) for the rest of his career. This career included stints as the Minister for Science, Head of the Defence Agency, Minister for International Trade and Industry, and as Prime Minister between 1982 and 1987.

Other powerful 'veto' (Hyams 2011) players, including Shoriki Matsutaro, a one time police officer and latterly proprietor of the popular newspaper the *Yomiuri*, joined Nakasone in his advocacy of nuclear power. Unlike Nakasone, however, who preferred that government should take the lead, Shoriki supported a leading role for business in the development of a Japanese nuclear industry.

[10] On pre-war nuclear research see Dower (1996).

Shoriki fought hard to secure this goal, and was influential in founding the Council for the Peaceful Uses of Atomic Energy in April 1955. He went on, in 1956, to launch the Japan Atomic Industrial Forum as well as becoming Chair of the Atomic Energy Commission and Head of the Science and Technology Agency.[11]

From the very start, members of Japan's post-war hegemonic class such as Nakasone, Shoriki, and many others, attempted to script separate narratives for the "civilian" and "military" atoms. As part of the "Yoshida Doctrine" of rapid economic growth, low military expenditure, and protection within the US alliance system, Japan's leaders relied upon nuclear weapons for the common defence but denied that such weapons had ever been brought into Japan's sovereign space – despite entering into secret agreements allowing their introduction (Swenson-Wright 2005; Yamazaki 2009). In addition, Japan's hegemonic class sought to erode the effectiveness of the anti-nuclear movement through the development of the metaphor of the "nuclear allergy" – insisting that those who opposed the development of commercial nuclear power were either mentally ill, ignorant of the benefits of the technology, or both (Hook 1996). Over time, successive governments also adopted informal limits on the development and introduction of nuclear weapons and on defence spending more generally. Many of these informal limits had found earlier expression in the "Nuclear Energy Charter" drafted at the behest of the Japan Science Council following the "nuclear budget" of 1954 (Yoshioka 2005b). Finally, members of Japan's post-war hegemonic class used their influence to lobby in favour of the development of an ostensibly civilian-controlled, democratically accountable, commercial nuclear industry. Politicians, businessmen, scientists, and representatives of the media declared the wisdom and necessity of commercial nuclearisation, both within the Diet and amongst the general populace (Yanaga 1968; Samuels 1987; Yoshioka 2005a). According to their arguments, commercial nuclear reactors would both embody and fuel the technological advancement and industrial re-structuring necessary to maintain rising national income and living standards (Hein 1993).

These arguments clearly resonated with a Japanese populace beginning to enjoy the benefits of post-war recovery. Increasing acceptance of nuclear power used for *peaceful* purposes sat comfortably within a prevailing and deep-rooted ideology of techno-nationalism. Shorn of its explicit military associations, techno-nationalism appeared to be delivering on another promise: the possibility of mass consumption. The aspirations of Japan's urban-dwellers in particular were whetted by the adverts they saw on the trains they took to work, by the weekly magazines and

[11] From the outset, the privately funded JIF was spending hundreds of millions of Yen every year on its campaign to garner public support for commercial nuclear power. Samuels (1987: 236).

comics they read, by the goods on display in department stores, and by the advertising and movies they watched at the cinema.[12] It is in these everyday practices that we see "spontaneous" consent to nuclear power.

Following the introduction of television to Japan in 1953, audiences were entranced by the lifestyles they were exposed to through that medium. In the absence of much domestic content, popular US shows such as 'I Love Lucy' and 'Father Knows Best' became firm favourites. These shows portrayed a 'middle mass' lifestyle characterised by the enjoyment of consumer goods (particularly labour-saving devices such as washing-machines, sewing-machines, refrigerators, and vacuum cleaners) and by behavioural patterns and relational norms (leisure, personal freedom, and equality) associated with possession of those goods (Ivy 1993). This 'education in the possibilities of consumption' (Francks 2009: 160) was very deliberate. Television broadcasting was commercially unviable at the time, simply because most ordinary Japanese consumers could not afford to own a television set. Indeed, a great many of them, particularly outside of the urban centres, would not have been able to buy the products they saw advertised upon it.[13] Television was brought to Japan nevertheless, because men like Shoriki Matsutaro saw it primarily as a means to attain influence and power, rather than as a source of profit.[14] A more important consideration for Shoriki and his American patrons 'was the power of television as a weapon against communism' (Partner 2000: 105).

However, despite all the pressures and inducements, ordinary Japanese people had deep-seated reasons for associating nuclear technology with death and destruction, and many of them had their concerns confirmed after the veil of ignorance imposed by US censorship began to lift from 1952 onwards (Wittner 1993; Hook 1996). The anti-Security Treaty demonstrations in 1960 were moulded and directed by left-leaning political parties and the trade unions for the most part, but also through religious organisations and the print media as well as through wide-ranging debate amongst the scientific community (Nakayama 2005). Christians and Socialists dominated Japan's nascent peace movement, developing similar strategies and international links; and the Japanese Socialist Party campaigned on a platform of anti-militarism and permanent neutrality (Wittner 1993; Bamba and Howse 1978). Opposition fused around the US-Japan alliance, and around the plight of the *hibakusha* (atomic bomb-affected persons). The *hibakusha* drew attention both to their immediate

[12] Japan's urban population tripled in size between 1945 and 1970 (Francks 2009: 154).
[13] In 1955 there were 166,000 televisions either in use or licensed in Japan; by 1960 there were almost 7 million. The corresponding figures for West Germany were 2,000 and four and half million (Tipton 2002: 158).
[14] It was not until the end of the 1960s that almost all Japanese households possessed the 'three sacred treasures' (black-and-white TV, washing machine, and fridge). Francks (2009: 175 and 230).

circumstances (the refusal of the Japanese government to compensate them for their suffering, and the lack of medical treatment) and to the wider implications of nuclear power and radioactive contamination. The *hibakusha* kept the issue before the eyes of a global audience through a series of rallies, and were successful in establishing 6 August as World Peace Day, and in having Hiroshima named as a Peace Memorial City.

Armed with the knowledge of the atomic bombing on Hiroshima and Nagasaki, public perceptions of nuclear *weapons* were almost entirely negative.[15] These perceptions were strengthened by the uncertainty surrounding US nuclear strategy in the early Cold War. The successful testing of a Soviet atom bomb, on 24 September 1949, ignited fears of a nuclear conflict if the USSR were to intervene on behalf of the People's Republic of China under the provisions of the Sino-Soviet Treaty. These fears were magnified during the Korean War and again when it was discovered that the US had tested its first thermonuclear device. Finally, perceptions became reality on 1 March 1954, when Japan suffered its 'third nuclear attack' – the *Castle* Bravo test (Divine 1978).

As is now well known, as a consequence of the *Castle* Bravo test a Japanese fishing vessel, the Lucky Dragon No. 5 (*Daigo Fukuryu-maru),* was caught in the radioactive fall-out.[16] On its return to Japan, on 14 March, almost the entire crew of the vessel were suffering headaches, nausea and diarrhoea as a consequence of radiation exposure. What is less widely known is that a large number of fishing vessels were irradiated throughout the entire period of bomb testing in the Pacific. Sasamoto (2005: 137) reports that between March and the end of August 1954, ninety-six 'other fishing vessels were identified as having been directly affected by the "ashes of death" produced by the series of US hydrogen bomb experiments around Bikini Atoll from March to May 1954.

The Bikini incident, the death of the Lucky Dragon No. 5's radio officer on 23 September, and the hospitalisation of the twenty-two remaining crewmembers, proved a major spur to the anti-nuclear movement. Radioactive fallout, the "ashes of death", bridged the gap between commercial nuclear power and nuclear weapons, blunting the efforts of those desperate to establish a single narrative of the "friendly atom". A national petition against nuclear weapons gathered approximately 32 million signatures – more than half of Japan's registered voters (Hook 1996: 171; Jones 2010: 181-98). The city of Yaizu, the home port of the Lucky Dragon, passed a resolution calling for a ban on all military use of nuclear energy; a call echoed by other local governments as well as both Houses of the Diet. Nagasaki's International Cultural Hall and Hiroshima's Peace Memorial Museum attracted

[15] On public opinion, see Hook (1996: Chapter 5).
[16] For a detailed autopsy of the incident see Swenson-Wright (2005: Chapter 5).

more than 330,000 visitors between them in 1955, and in the same year Hiroshima hosted the First World Conference Against Atomic and Hydrogen Bombs. The Japan Council Against Atomic and Hydrogen Bombs (Gensuikyo) was formed in September 1955, and would go on to become one of Japan's most important mass movements.

US Propaganda and the Triumph of the "Friendly Atom"

The decisive element in securing Japanese consent to nuclearisation was American power. Without support from the United States, nuclear power may never have been an option for Japan at all, given that the US supplied the enriched uranium, the technological and engineering know-how and training, and the financial capital required to lay Japan's nuclear foundations. In the event, Eisenhower's speech to the United Nations on 8 December 1953 launched the "Atoms for Peace" campaign and in so doing helped to steer Japan in the path of nuclear power. Outwardly an attempt by the US to encourage the peaceful use and diffusion of atomic energy through the creation of the International Atomic Energy Agency, the campaign was also a veiled attempt to maintain the extant technology gap between the US and potential new entrants by exposing them to a regime of monitoring and surveillance. In addition, by 'demonstrating the ability to bring "rapid, cultural, economic and social improvements through the application of power reactors," the United States would offer progress through the ingenuity of American capitalism' (Osgood 2006: 169). This was what motivated US offers to supply Japan with nuclear technology and enriched uranium, a process that culminated in the signing of the United States Japan Atomic Energy Agreement on November 14, 1955.

Overseen by the Operations Coordinating Board (OCB), the Atoms for Peace initiative had the full weight of the US government behind it.[17] The US Information Agency (USIA), created in August 1953, distributed Eisenhower's speech throughout the globe. The USIA distributed in excess of 16 million posters and booklets advertising the speech through its 217 overseas posts, and the Voice of America broadcast it live to thirty-five countries. Leading newspapers in twenty-five countries published the speech in full. The USIA worked closely with American firms and non-governmental organisations throughout the world, overseeing the distribution of approximately 400,000 leaflets. Westinghouse Electric Company, a firm with plans to supply atomic power to Japan, attached a cover note of its own to the 35,000 leaflets it distributed to business executives, engineers and opinion leaders in more than 125 countries. As Osgood (2006: 166) makes clear, the effort to publicise "Atoms for Peace" 'was a global one, linking public and private resources in a total campaign to sell Eisenhower's plan to the world.'

[17] The bulk of the material in this paragraph is from Osgood (2006: 162-66).

In the wake of the damaging publicity surrounding the irradiation of the Lucky Dragon No. 5, the USIA placed greater weight on the peaceful application of nuclear technology. A series of television programmes entitled *The Magic of the Atom* went into production. Each episode focussed on a particular aspect: *Power Unlimited*, *The Atom and Agriculture*, *The Atom and Industry*, *The Atomic City* and so forth. The USIA created travelling exhibits and despatched them to major cities in Europe, Africa and Asia. These exhibits were designed to replace the fearsome image of the mushroom cloud, so dominant in the public imagination, with peaceful images of medical and biochemical research, industrial and agricultural production, and electrical power generation. They featured working models of Geiger counters, and workers interacting safely with nuclear materials and machinery. They also featured illustrations of nuclear power plants and the process of power generation, and colourful displays depicting the "friendly atom" at work. All of the exhibits showed a film produced by General Electric called *A Is for Atom*. The film presented the basic physics of atomic power and its peaceful application – using simple language and visuals comprehensible to the lay viewer. The implicit message throughout was that nuclear power was safe, cheap, innovative, liberating, and above all, American.

Following a Shinto "purification" ceremony on its arrival in November 1955, the Japan exhibition spent six weeks in Tokyo before showing in six other Japanese cities. The Kyoto exhibit alone received over 150,000 visitors (Osgood 2006: 176). The one millionth Japanese visitor toured the exhibition while it was housed in the Hiroshima Peace Memorial Museum – despite the furore caused by the removal of atom-bomb exhibits to create sufficient space (Zwigenberg 2012). Co-sponsored on the one hand by Shoriki Matsutaro (via the *Yomiuri*) and other Japanese businesses, and on the other by the US government, the exhibition resonated strongly with the Japanese public. The wide range of practical applications of nuclear power apparently left visiting scientists stunned. Schoolchildren marvelled at the nuclear powered ships, trains and aeroplanes. The fashionably dressed exhibition guides reportedly impressed the female audience almost as much as the array of new household devices on display (Zwigenberg 2012).

Despite the enchantment of these exhibitions, anti-nuclear protests continued as a feature of the Japanese social landscape for some years. There is little question, however, that the Atoms for Peace exhibitions constituted a significant milestone on Japan's path toward nuclear power. The exhibitions, and the wider propaganda campaign of which they were a part, successfully made the argument that the commercial exploitation of nuclear technology was both feasible and desirable. In the Japanese case in particular, advocates of nuclear power tapped into a deeply rooted acceptance

of techno-nationalism: an ideology made safe through its disassociation from military power and authoritarian rule on one hand, and from nuclear weapons on the other.

Conclusion

Upon a foundation provided by the historical materialism of Antonio Gramsci, this paper has revisited an historical narrative no doubt familiar to many readers of this journal. A Gramscian interpretation negates neither the importance of the domestic debate and struggle over nuclear power that took place in Japan in the 1950s, nor the centrality of American power and its creation of a new world order post-1945. However, the paper argues that the origins of nuclear power in Japan lie not solely within the domestic sphere. Nor do they lie solely in the machinations of American and Japanese elites inside and outside of government. Power, money, and institutions were obviously key elements, but on their own cannot tell the whole story.

Without neglecting the aforementioned variables, a Gramscian analysis draws the analytical gaze both further back in time and toward the key roles played by ideology and civil society. For this reason the narrative begins in the mid-nineteenth century, and with elite perceptions of Japanese inferiority relative to the encroaching western imperial powers. Their reaction to the vulnerability engendered by western imperialism was to seek to "catch up" to the west in economic and military terms as rapidly as possible given the circumstances in which they found themselves. In order to achieve this, they swept away the *ancien regime* and replaced it with an authoritarian yet recognisably modern bureaucratic state. In order to gain the consent of the bulk of the Japanese people to the pursuit of techno-nationalism, and to the sacrifices it entailed, successive governments conjured visions of future prosperity and national autonomy. Thus, at various times, Japanese people were exhorted to embrace "civilisation and enlightenment" and to make Japan into a "rich nation, strong army".

The consequences of Japan's techno-nationalism are well known. Radical nationalism underpinned by a cult of "emperor worship" drove Japan toward imperialism abroad and authoritarianism and militarism at home. Ultimately, Japan confronted an enemy far stronger and more technically advanced than itself, and the tragedy of the atomic bombings was the result. These experiences, coupled with the US-led Occupation and the exigencies of the emerging Cold War, served not to destroy Japan's pursuit of techno-nationalism but to confirm and transform it. Shorn of its explicit military component, techno-nationalism was more mundane but that much safer. In place of a "rich nation, strong army" there now stood an "income-doubling plan." This future Japan was portrayed as a country at peace with itself and its neighbours; a sovereign yet "pacifist" state; a place of

opportunity, personal prosperity and, above all, of steadily rising consumption.

Advocates of nuclear power offered all of these visions and more. Despite having often competing priorities and strategies, nuclear advocates brought their considerable resources and skills to bear on a Japanese population familiar with the aims of techno-nationalism yet concerned about the dangers of nuclear weapons and radioactive fallout. Ordinary Japanese people consented to nuclear power as a result of a fear of the emerging "communist threat", combined with a desire to embrace the transformative possibilities offered by commercial nuclear power. In its turn, the Japanese state set limits on re-militarisation and sought to minimise its association with nuclear weapons as far as practicably possible.

In the post-Fukushima world, Japanese people appear – for the moment at least – far less likely to be swayed by nuclear advocacy. And yet it seems unlikely that Japan will divest itself of nuclear power for the foreseeable future. Quite apart from the physical challenges associated with tearing down and safely disposing of the very considerable nuclear infrastructure and its waste products, Japan still needs a steady and reliable supply of energy. Moreover, Japan faces a difficult strategic situation in its region: where nuclear weapons are in abundance. Finally, the "nuclear village" is extremely powerful and deeply entrenched within Japanese society. Removing it, or even bypassing it, would be a difficult task for any government no matter how much backing it received from civil society. Nevertheless, as Gramsci suggests, ideology plays a huge yet often overlooked role. Techno-nationalism lives on in Japan despite Fukushima, and therein may lie the beginnings of its post-nuclear future: one where new materials and new sources of power hold sway, and where different ways of living in the world seem not only desirable but possible.

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